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AMENDMENTS TO THE CLAIMS

A detailed listing of all claims that are, or were, in the present application, irrespective of whether the claim(s) remains under examination in the application are presented below. The claims are presented in ascending order and each includes one status identifier. Those claims not cancelled or withdrawn but amended by the current amendment utilize the following notations for amendment: 1. deleted matter is shown by strikethrough; and 2. added matter is shown by underlining.

Claims:

1. (Cancelled).

2 (New) A method for dynamically determining a second phase of a transchest external defibrillation biphasic shock pulse which, when applied through electrodes positioned on a patient's torso, will produce a desired response in the patient's cardiac cell membranes, including:

providing a quantitative model of a defibrillator circuit for producing the external defibrillation shock pulse;

providing a quantitative model of a patient including a chest component, a heart component and a cardiac cell membrane component;

providing a quantitative description of a predetermined response of said cardiac cell membrane to said shock pulse; and

providing instructions comprising:

computing a quantitative description of a first phase of a transchest external defibrillation shock pulse that will produce said predetermined cardiac cell membrane response, wherein said computation is made as a function of predetermined cardiac cell membrane response, the patient model and defibrillator circuit model; and

computing a quantitative description of a second phase of a transchest external defibrillation shock pulse based on the first phase.

3. (New) A method for determining a first and a second phase of a biphasic defibrillation shock pulse, one of said first phase and said second phase having variable energy, wherein upon

application of said first phase and said second phase of said biphasic defibrillation shock pulse a desired response is produced in a patient's cardiac cell membrane comprising:

providing a quantitative model of a defibrillator circuit for producing said biphasic defibrillation shock pulse;

providing a quantitative model of a patient that includes a variable heart component;

providing a quantitative description of a predetermined response of said cardiac cell membrane to said shock pulse; and

providing instructions for determining a quantitative description of a first phase and a second phase of said biphasic defibrillation shock pulse comprising:

selecting from a group consisting of items (a) and (b) as defined below:

(a) determining a quantitative description of a first phase of said biphasic defibrillation shock pulse that will produce said predetermined response of said cardiac cell membrane, wherein the determination is made as a function of said predetermined response of said cardiac cell membrane, said quantitative model of a defibrillator circuit, and said quantitative model of a patient, and wherein the quantitative description of the first phase provides for setting a time duration for said first phase based on said variable heart component, whereby an amount of energy to be delivered by said first phase varies according to the time duration that is set; and

determining a quantitative description of a second phase of said biphasic defibrillation shock pulse phase on said first phase; and

(b) determining a quantitative description of a first phase of said biphasic defibrillation shock pulse that will produce said predetermined response of said cardiac cell membrane, wherein the determination is made as a function of said predetermined response of said cardiac cell membrane, said quantitative model of a defibrillator circuit, and said quantitative model of a patient; and

determining a quantitative description of a second phase of said biphasic defibrillation shock pulse based on said first phase, wherein said quantitative description provides for setting a time duration for said second phase based on said variable heart component whereby an amount of energy to be delivered by said second phase varies according to said time duration that is set.

4. (New) An automatic external defibrillation system configured for determining a first and a second phase of a biphasic defibrillation shock pulse, one of said first phase and said second phase having variable energy, wherein upon application of said first phase and said second phase of said biphasic defibrillation shock pulse a desired response is produced in a patient's cardiac cell membrane comprising:

means for producing a quantitative model of a defibrillator circuit for producing said biphasic defibrillation shock pulse;

means for producing a quantitative model of a patient that includes a variable heart component;

means for producing a quantitative description of a predetermined response of said cardiac cell membrane to said shock pulse; and

instructions for determining a quantitative description of a first phase and a second phase of said biphasic defibrillation shock pulse comprising:

selecting from a group consisting of items (a) and (b) as defined below:

(a) determining a quantitative description of a first phase of said biphasic defibrillation shock pulse that will produce said predetermined response of said cardiac cell membrane, wherein the determination is made as a function of said predetermined response of said cardiac cell membrane, said quantitative model of a defibrillator circuit, and said quantitative model of a patient, and wherein the quantitative description of the first phase provides for setting a time duration for said first phase based on said variable heart component, whereby an amount of energy to be delivered by said first phase varies according to the time duration that is set; and

determining a quantitative description of a second phase of said biphasic defibrillation shock pulse phase on said first phase; and

(b) determining a quantitative description of a first phase of said biphasic defibrillation shock pulse that will produce said predetermined response of said cardiac cell membrane, wherein the determination is made as a function of said predetermined response of said cardiac cell membrane, said quantitative model of a defibrillator circuit, and said quantitative model of a patient; and

determining a quantitative description of a second phase of said biphasic defibrillation shock pulse based on said first phase, wherein said quantitative description provides for setting a time duration for said second phase based on said variable heart component whereby an amount of energy to be delivered by said second phase varies according to said time duration that is set.

5. (New) A defibrillation apparatus for delivering a biphasic defibrillation shock pulse to produce a desired response in a patient's cardiac cell membrane, wherein a second phase of said biphasic defibrillation shock pulse has a variable energy, comprising:

a defibrillator circuit; and

a pair of electrodes operably coupled to said defibrillator circuit, wherein said pair of electrodes delivers said biphasic defibrillation shock pulse to said patient's cardiac cell membrane;

instructions comprising:

configuring said defibrillator circuit according to:

a quantitative model of a defibrillator circuit for producing said biphasic defibrillation shock pulse;

a quantitative model of a patient that includes a variable heart component; and

a quantitative description of a predetermined response of said cardiac cell membrane to said shock pulse;

a quantitative description of a first phase of said biphasic defibrillation shock pulse that will produce said predetermined response of said cardiac cell membrane, wherein said

quantitative description of said first phase has been determined from said predetermined response of said cardiac cell membrane, said quantitative model of said defibrillator circuit, and said quantitative model of said patient; and

a quantitative description of a second phase of said biphasic defibrillation shock pulse wherein said quantitative description of said second phase has been determined based on said first phase and wherein said quantitative description of said second phase includes a time duration setting that has been based on said variable heart component whereby an amount of energy to be delivered by said second phase varies according to said time duration setting.